Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

SUCCESS STORY

AFRL RESEARCH TEAM COMPLETES SOLAR THERMIONIC CONVERTER TESTING

The Air Force needs a reliable solar energy conversion system for use on spacecraft that require electrical power for extended periods of time. Cylindrical Inverted Converter technology is critical to helping meet these requirements.

Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

A joint AFRL/National Aeronautics and Space Administration (NASA)/General Atomics (San Diego, California) research team successfully ignited a solar-heated thermionic converter, which converts heat energy to electrical energy. During AFRL's testing, the thermionic converter generated 160 A at 0.2 V (over 30 W of electrical power)--the most electrical power output ever achieved from a single solar-heated thermionic converter.

Background

This very successful "on-sun" demonstration of Cylindrical Inverted Converter technology is especially important to AFRL's High-Power, Advanced Low Mass (HPALM) program, which requires a solar energy conversion system for use with spacecraft.

The HPALM concept involves the use of an inflatable solar concentrator to focus solar energy onto a thermionic converter. AFRL's research team conducted this test at the NASA Marshall Space Flight Center's Solar Thermionics Ground Test Facility, in Huntsville, Alabama.

Propulsion
Emerging Technologies

Additional Information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (PR-S-06-01)